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Places of some Stars which have been compared with the Planet Sappho at the Cambridge Observatory and elsewhere; deduced from observations with the Cambridge Transit Circle.

Arg.	No.	Mag.	Mean R.A. Jan. 1, 1887.	Mean N.P.D. Jan. 1, 1887.	Number of Observations
	°		h m s	° ′ ″	
Arg.	+9—1276	7-5	6 39 13·314	80 7 5·05	5
„	+9—1297	8-5	6 43 22·912	80 15 1·17	5
„	+9—1314	7-7	6 45 23·784	80 25 38·70	5
„	+9—1330	8-9	6 48 19·610	80 22 25·73	5
„	+9—1352	9	6 50 56·975	80 46 15·67	4
„	+9—1353	9	6 50 58·533	80 50 54·87	3
„	+9—1394	7-9	6 57 2·624	80 48 39·80	3
„	+8—1626	9-4	6 57 3·940	81 3 53·64	2
„ B.A.C.	+9—1396 2304	6	6 57 7·239	80 41 54·64	5
Arg.	+8—1651	8-4	7 0 33·209	81 6 32·65	5
„	+9—1447	8-3	7 4 27·586	81 1 56·56	3
„	+8—1697	8-7	7 7 8·651	81 15 13·51	3
„	+8—1709	9-4	7 9 2·798	81 4 23·47	4
„	+8—1752	9	7 17 30·215	81 12 19·88	3
„	+9—1541	8-9	7 19 20·611	80 59 32·69	3
„	+9—1569	9	7 22 54·534	80 59 24·45	3
„	+8—1801	8-5	7 26 38·076	81 6 13·69	3

On the Orbit of Comet II. 1883. By Lieut.-Gen. J. F. Tennant, R.E., F.R.S.

I recently sent a note to the Secretaries acknowledging that Mr. Bryant had pointed out two mistakes in the comparison of the places of this comet with my Ephemeris. I was, however, on looking over his paper, very doubtful as to the mode in which his normal places were obtained, and have examined and repeated my calculations.

Believing that Mr. Bryant had verified all my reductions, I assumed these, with the corrections he pointed out, to be accurate, and proceeded to interpolate the errors of the Ephemeris so as to get the most probable values at the same dates as before. The errors changed a good deal, and on proceeding to compute a parabolic orbit I found that the following (which is close to Mr. Tebbutt's) represented my new places almost exactly:—

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Perihelion Passage, 1883, Dec. $25^{d}\cdot30221$.

$$\text{Equinox of Jan. 1, 1884}\begin{cases}\pi = 43^{\circ}\ 12'\ 24''\cdot79 \text{ or } \omega = 138^{\circ}\ 45'\ 03''\cdot29,\\ \Omega = 264\ 27\ 21\cdot50,\\ L = 114\ 59\ 03\cdot71,\end{cases}$$

$$\log. q = 9\cdot4919541.$$

This result was so different from Mr. Bryant's, that, having ascertained that he had not verified all my reductions, I once more repeated them, and finding only one sensible change I proceeded to deduce fresh normal places. These were—

		R.A.	Dec.
		° ′ ″ ″	° ′ ″ ″
For 1884, Jan.	17·0	340 41 23·07 ± 2·31	−41 32 52·64 ± 1·10,
	23·5	349 09 20·11 ± 1·98	−41 58 18·51 ± 2·34,
	30·0	355 01 27·03 ± 3·63	−41 51 55·78 ± 0·88.

		Longitude.	
		° ′ ″ ″	° ′ ″ ″
or for 1884, Jan.	17·0	325 11 34·2 ± 1·89	−30 39 36·5 ± 1·24,
	23·5	331 36 34·5 ± 2·05	−33 55 15·3 ± 2·18,
	30·0	336 21 03·6 ± 1·83	−35 54 41·2 ± 2·31,

all being referred to the equinox of Jan. 1, 1884.

The corresponding places, computed from the elements I have given above, are:—

		° ′ ″	° ′ ″
For 1884, Jan.	17·0	325 11 35·1	−30 39 36·6,
	23·5	331 36 33·2	−33 55 14·1,
	30·0	336 21 03·9	−35 54 41·5;

that is, the elements represent the normal places far within their probable errors. It would seem, then, that the difference of the results at which Mr. Bryant and I have finally arrived is due to the modes in which we have respectively deduced our normal places from observation.

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Ephemerides of the Satellites of Saturn, 1887–88. By A. Marth.

In the following ephemerides the five inner satellites are assumed to move in circular orbits in the plane of the ring, the ascending node N and inclination J of which, in reference to the plane of the Earth's equator, are assumed to be

For 1888·0 $N = 126°·6279$ $J = 6°·9930$.

In the tables P denotes the position-angle of the minor axis of the ring, $L + 180°$ the planetocentric longitude of the Earth referred to the plane of the ring, $\Lambda + 180°$ that of the Sun, or $\Lambda - L$ the difference between the two. The apparent equatorial diameter of the ball and the diameter of the outer rim of the ring depend still on Bessel's determinations. The assumed proportion of the polar axis of the ball to the equatorial diameter is 0·900.

In the tables for the five satellites a and b are the semi-axes of the apparent orbits, l–L the longitudes of the satellites in their orbits reckoned from the points which are in superior conjunction with the planet's centre or in opposition to the Earth in longitude. By adding to $l - L$ the value of L from the first table, the longitudes l are found. These longitudes, which are the orbital longitudes from the ascending node added to the right ascension N of the ascending node, reckoned from the point of the true equinox, are corrected for the equation of light, and depend on the following assumed values, which refer to the time when the light arrives at the distance [0·950] :—

Greenwich Noon.	Mimas. l_1	Enceladus. l_2	Tethys. l_3	Dione. l_4	Rhea. l_5
1887, Oct. 15	218°·950	190°·745	156°·156	340°·497	0°·883
Nov. 14	158·743	152·699	117·100	326·547	231·586
Dec. 14	98·538	114·653	78·045	312·597	102·289
1888, Jan. 13	38·334	76·607	38·989	298·647	332·992
Feb. 12	338·131	38·561	359·934	284·697	203·695
Mar. 13	277·989	0·515	320·878	270·747	74·398
Apr. 12	217·728	322·468	281·822	256·796	305·100
May 12	157·528	284·422	242·767	242·846	175·803

The values of P, a, b and $l - L$ are to be interpolated directly for the times for which the apparent positions of the satellites are required, and the rectangular co-ordinates x and y, reckoned parallel to the axes of the ring, and expressed in seconds of arc, or, if polar co-ordinates are wanted, the position-angles p and distances s of the satellites in reference to the planet's centre, are then found by means of the formulæ :

$$s \sin (p - P) = x = a \sin (l - L),$$
$$s \cos (p - P) = y = b \cos (l - L).$$